Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus for estimating phase information, comprising:

a matched filter that outputs converted synchronization signals, based on received data, and converted information of the received data;

a CPU that receives the converted synchronization signals and the converted information to provide a first output signal based on the converted synchronization signals and the converted information outputted from the matched filter; and

a phase estimator that generates first and second decoded data based on the received data, the estimator having ~~a first~~ an averager that receives the first output signal from the CPU, the first and second decoded data and the converted information to generate the phase information,

wherein the converted information comprises converted phase values (cosine A and sine A) of a received pilot signal.

2. (Currently amended) The apparatus of claim 1, ~~further comprising:~~

wherein the averager comprises a first averager and a second averager and the phase information comprises a first phase information and a second phase information, the phase estimator further comprising;

a first delayer receiving the first phase information and outputting a delayed phase information to the first averager, wherein

the first averager generates subsequent first phase information based on the delayed phase information and the first decoded data;

a second delayer receiving the second phase information and outputting a delayed phase information to said second averager, wherein

the second averager of the phase estimator generates subsequent second phase information based on the second decoded data and the delayed phase information received from the second delayer.

3. - 4. (Canceled).

5. (Previously Presented) The apparatus of claim 1, wherein: the converted synchronization signals are at least one of locked position signals and locked energy signals.

6. (Currently amended) The apparatus of claim 2~~1~~, further comprising:

a first and second ~~a plurality~~ groups of multipliers that multiplies the received data and a code; and

~~an~~ a first and a second adders ~~adder~~ that adds data outputted from the ~~plurality~~ first and second groups of multipliers, respectively, wherein

the first averager averages data outputted from the first adder with the first output ~~signal~~signal;

the second averager averages data outputted from the second adder with the first output signal.

7. (Currently amended) The apparatus of claim 1, wherein the CPU provides ~~the converted information as~~ the first output signal to initialize the first and second averagers ~~averager~~.

8. (Currently amended) A method for estimating phase information, comprising:

estimating synchronization data, based on received data; generating a Cos A signal and a Sin A signal to ~~identify~~ a converted phase value of the received data in a pilot signal;

generating first and second decoded data based on the received data and a code, the code corresponding to a synchronization time of the synchronization data;

outputting ~~an~~ first and second average ~~value~~ values of phase information obtained by

averaging the synchronization data and the first and second decoded data and using at least the converted phase value.

9. (Canceled)

10. (Original) The method of claim 8, wherein the average ~~value is~~values are initialized using the synchronization data.

11. – 12. (Canceled)

13. (Currently amended) The method of claim 8, wherein subsequent first and second phase information is obtained by averaging the phase information with subsequent first and second decoded data.

14. (Currently amended) A method of estimating phase information, comprising:

generating a synchronization signal and a converted phase value of a pilot signal with a matched filter based on received data;

establishing an averaging period based on the synchronization signal and the converted phase value; and

averaging the ~~converted phase value~~ synchronization signal with first and second decoded data obtained during the averaging period using at least the converted phase value to create the phase information for the first and second averaging ~~period~~periods,

wherein the converted phase value comprises ~~one of~~ a cosine A signal and a sine A signal.

15. (Currently amended) The method of claim 14, further comprising multiplying the received data, received during the averaging period, by a pseudo-noise (PN) code to form the first and second decoded data.

16. (Currently amended) The method of claim 15, further comprising synchronizing the PN code with the first and second averaging periods~~period~~.

17. (Original) The method of claim 14, wherein:

the synchronization signal is generated based on a synchronization preamble within the received data;

the converted phase value is generated based on a phase preamble within the received data; and

the converted phase value identifies a phase shift in the received data.

18. (Original) The method of claim 14, wherein:

the converted phase value identifies a phase shift in a transition between symbols of the received data; and

the symbols are represented by multiple phases.

19. (Currently amended) The method of claim 14, ~~further comprising~~ wherein said averaging averages the first decoded data using the first phase information and averages the second decoded data using the second phase information, respectively, received during a current averaging period, with the phase information of a previous averaging period to create first and second~~the~~ phase information for the current averaging period.

20. (Currently amended) A receiver for a communication system, comprising:

a filter means for generating a synchronization signal and a converted phase value of a pilot signal based on received data;

a processor means for establishing an averaging period based on the synchronization signal and the converted phase value; and

an averaging means for averaging the ~~converted phase value~~ synchronization signal with first and second decoded data obtained during the averaging period to create first and second phase information for the averaging period and using at least the converted phase

value,

wherein the converted phase value comprises ~~one of~~ a cosine A signal and a sine A signal.

21. (Currently amended) The receiver of claim 20, further comprising

a correlator means that multiplies the received data, received during the averaging period, by a pseudo-noise (PN) code to form the first and second decoded data.

22. (Original) The receiver of claim 21, wherein the processor means synchronizes the PN code with the averaging period.

23. (Original) The receiver of claim 20, wherein:

the synchronization signal is generated based on a synchronization preamble within the received data;

the converted phase value is generated based on a phase preamble within the received data; and

the converted phase value identifies a phase shift in the received data.

24. (Original) The receiver of claim 20, wherein:

the converted phase value identifies a phase shift in a transition between symbols of the received data; and

the symbols are represented by multiple phases.

25. (Currently amended) The receiver of claim 20, further comprising a delay means, operating in conjunction the averaging means, for averaging the first and second decoded data, received during a current averaging period, ~~with the~~using a delayed first and second phase information of a previous averaging period to create the first and second phase information for the current averaging period.